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November 5, 2012

To: Supervisor Zev Yaroslavsky, Chairman
Supervisor Gloria Molina
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Supervisor Michael D. Antonovich

From: William T Fujioka
Chief Executive Officer

BROADBAND INTERNET ACCESS (ITEM 81-B, AGENDA OF SEPTEMBER 18, 2012)

On September 18, 2012, the Board, on motion of Supervisor Antonovich, instructed the Chief Executive Officer (CEO), in collaboration with the Chief Information Officer (CIO), to report on the following items:

1. Examine the "Chattanooga Model" and report back to the Board in 45 days on how best to upgrade Los Angeles County's Information and Communications Technology infrastructure to spur innovation, job creation, and improved government services, as well as coordinate with the County's internet service providers, public and private utility providers, colleges, universities, community colleges, our 134 unincorporated communities, 88 cities, US IGNITE, and all the Economic Development Agencies located in Los Angeles County on a possible partnership for this endeavor; and
2. Update the County's protocols for the distribution of information to ensure that County government continues to be transparent and accountable to the Public while protecting the privacy rights of foster youth, patients, clients, and its employees and security of confidential information.

THE CHATTANOOGA MODEL

In 2009, the City of Chattanooga, Tennessee received a stimulus grant from the Federal Department of Energy (DoE) to build a fiber-optic networking "smart grid" to better manage its municipal electrical utility, the Electric Power Board (EPB). In 2010, as a byproduct of its smart

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grid plan, the EPB began using the new fiber-optic infrastructure to deliver additional services, namely Internet, telephone, and television services.

Although Chattanooga calls itself “The Gig City” for the availability of gigabit Internet connectivity (up to 1000 megabits of information per second), the EPB’s Fi-Speed Internet® service starts at 50 megabits per second at a cost of \$57.99 per month, with additional taxes, fees, and equipment rental. Gigabit service is available to subscribers at \$299.99 a month with similar additional costs. The EPB also offers “bundling” of those services with the Internet service in exchange for discounts compared to purchasing them separately.

Chattanooga also leveraged the smart grid’s fiber optic network to deploy a wireless “mesh” network that is used by dozens of city applications, from public safety to building inspection to traffic management. Based on outdoor mounted Wi-Fi equipment interconnected to the fiber optic network, the mesh system has approximately 600-700 access points that cover approximately 85 percent of Chattanooga’s downtown and major arteries. Unlike the gigabit network that is operated commercially by the EPB, the mesh network is operated by the City’s Information Services Division for municipal services.

APPLICABILITY OF THE CHATTANOOGA MODEL

After reviewing Chattanooga’s hyper-connectivity model, we identified at least three distinct aspects to the “Chattanooga Model” that have different degrees of applicability to Los Angeles County: wired broadband Internet access, wireless mesh networking, and the planning for economic development.

Broadband Internet Access

Chattanooga was able to leverage certain circumstances to provide gigabit-capable Internet connections that are significantly different than those of the County, including:

- **Municipal Electric Utility** – The EPB enables Chattanooga the opportunity to reach every business and home in its service area with broadband access. The County is served by various public and private utilities, each with different positions on how to offer—or whether to offer—broadband Internet access to its customers.
- **Smaller Coverage Area** – Chattanooga is approximately 600 square miles with approximately 170,000 homes and businesses versus the County’s 4,084 square miles and approximately 5.5 million homes and businesses. Given the County’s vastly larger area and population, it would be cost prohibitive to deploy the infrastructure necessary for universal hyper-connectivity. Even on a smaller scale, the equitable selection of where those improvements would be made within the County would be challenging.

- **Grant Start-Up Funding** – The EPB received \$111.5M from the DoE's Smart Grid Investment Grant program in 2009 as part of the American Recovery and Reinvestment Act (ARRA). The grant, which required 1:1 matching funds, funded the automation of electrical transmission and distribution systems and the deployment of electrical smart meters for all of the EPB's utility customers. The EPB obtained long-term bond financing for the majority of the matching funds, which will be repaid by its customers and from smart grid savings over the next 10-15 years.
- **Limited Competition for Internet Services** – Chattanooga has fewer competitors for broadband access services compared to Los Angeles County. The County has a larger number of residents, higher population density, greater proximity to major Internet service provider hubs, and more information technology, entertainment, and other industries in the area. These factors result in Internet access services that are competitively priced and widely available.
 - According to the California Public Utilities Commission in 2011, 72.8 percent of Los Angeles County households have subscribed to fixed broadband Internet services, and that figure does not include mobile broadband subscriptions such as those used by smartphones or tablet computers.
 - County schools, through programs such as E-Rate, have achieved excellent overall Internet connectivity, including 165 schools having gigabit or faster connections, at least 592 schools with 10 megabit or faster connections, and all schools averaging 10 megabits, according to the California Department of Education's K-12 High Speed Network.
 - Internet Service Providers in the County provide broadband access for less than the minimum monthly fees from Chattanooga EPB's Fi-Speed Internet®, albeit at much slower speeds. Chattanooga's fiber optic network service requires subscribing users to pay monthly access fees, and for gigabit speeds those users would each pay approximately \$3,600 per year.
 - For rural access, a national satellite television provider announced in September a broadband service delivered by satellite that is targeted to nation's underserved rural customers. The service, which starts at approximately \$50 per month for 5/1 megabit (5 megabits per second download, 1 megabit per second upload) speeds, only requires a clear view of the southern sky to operate.

The EPB, as a municipal utility, is competing against similar Internet, telephone, and television offerings from companies such as AT&T and Comcast in the Chattanooga market. Given the commercial service options already available in Southern California, we do not believe that

operating a competing service would be the best use of taxpayer dollars. It should also be noted that, nationwide, the deployment of municipal networks is a controversial matter that has resulted in legislation at the State level.

Wireless Mesh Networking

We believe that there is greater applicability of a wireless mesh approach than a hyper-connected, fiber optic network approach. Generally, the County has limited coverage of Wi-Fi networks within County facilities and very little outside of our buildings. Consequently, this limits the County's utilization of mobile applications because they require cellular data connections or specialized wireless networks.

Chattanooga uses a system of outdoor Wi-Fi to extend wireless broadband for City use. That approach has driven efficiencies, enabled innovative uses, and helped to secure additional grant funding. The City is gradually expanding the system in both coverage and supported applications, most of which are newly conceived.

The County approach to a mesh network, however, would be different, because of our size and because we do not have the advantage of a utility gigabit network already built and in place. The County could look to leverage where we have existing network locations and develop a large mesh network to provide seamless communication capabilities such as public libraries, healthcare facilities or public social service areas.

Economic Development

While broadband Internet access is an enabling technology for economic development initiatives, high-speed access alone is not the reason why the Chattanooga has been successful. Chattanooga is engaged in multi-faceted, long-range planning with a focus on education, sustainable growth, incentives, quality of life, and redevelopment to encourage businesses to relocate. A major telecommunications company we spoke with indicated that a city's ability to attract or develop a skilled workforce was more important than availability of a gigabit network when determining where to invest.

Chattanooga successfully used its economic development agency, The Enterprise Center, as well as economic development consultants, business incubators, and its chamber of commerce to not only help develop the partnerships needed for Gig City, but to also market the initiative.

The County could similarly utilize its own economic development agencies to coordinate and market the benefits of a technology initiative in Los Angeles County.

THE COUNTY'S PROTOCOLS FOR DISTRIBUTION OF INFORMATION

The County has established Board-approved information security and enterprise information management programs to manage County's information assets and to foster a citizen-centric integrated service delivery model. Both programs are collaborative efforts between the Chief Information Office and County departments to identify and implement innovative and industry best-practices measures that improve the quality of County information assets, to promote information sharing and reuse, to streamline information management, to reduce program costs, and to enhance the quality of the public services.

The Chattanooga Model highlights the importance of broadband Internet access and wireless networks in enabling hyper-connectivity and promoting growth exponentially for connected devices from computers to smartphones. However, appropriate levels of security, privacy protections and safeguards are needed to comply with government security and privacy regulations and to adhere to County security and privacy policies and standards. These protections and safeguards mitigate the potential of cybercrime that lends itself to data breaches of individuals' personally identifiable information (e.g., social security numbers).

The County has implemented numerous security measures to mitigate risks and vulnerabilities specific to the Internet and the County's Enterprise Network. A broadband network infrastructure expansion would require further examination of security protocols and privacy protections in collaboration with public-private partnerships and development of a secure network design.

CONCLUSION

While the Chattanooga Model may not have complete applicability to Los Angeles County, its approach is visionary and forward-looking. Its scope, goals, funding, and positive impact on that city's economic development are encouraging to other local governments.

Chattanooga's success is based on three fundamental principles: (1) re-thinking the delivery model of city services to take advantage of opportunities offered by new technologies; (2) working collaboratively with businesses and community organizations in developing a more efficient and responsive city government; and (3) utilizing Federal funding for the needed technology infrastructure investments.

In the spirit of the Chattanooga Model, we offer the following recommendations for the Board's consideration:

1. **Implement County Pilot Projects** -- Since any large-scale initiative would be ambitious and complex, we recommend that the County examine smaller, more immediate projects that could serve as proof-of-concepts for a mesh network, hyper-connectivity initiative. There are at least two County agencies, the Department of Beaches and Harbors (DBH) and the Community Development Commission (CDC), who are considering public-

private partnerships to deliver broadband Internet access to the public for use at County facilities. DBH is exploring extending Wi-Fi access to patrons of the County's beaches, while CDC is looking to improve television and Internet access for residents of the County's housing developments and to enable enhanced public safety and staff connectivity. These are smaller projects that could serve as models to develop public-private partnerships needed for a more comprehensive initiative.

2. **Evaluate Deployment of Wireless Mesh Technology** -- The County could extend its Enterprise Network infrastructure to include wireless mesh technology near County facilities to enable mobile applications and enhanced e-government services. Although infrastructure improvements would be needed and funding sources must be identified, this approach is technically achievable and leverages the existing County network. Even if a mesh network approach is not adopted, further expansion of indoor Wi-Fi networks will help departments improve the delivery of e-government services.
3. **Establish Challenge Grants** -- Another possible approach would be to host a competition or challenge grant for companies and organizations to develop innovative, creative and cost-effective solutions in the areas of hyper-connectivity, broadband Internet access, or electronic government. For example, the Federal General Services Administration operates Challenge.gov, which provides awards to the public for creative solutions to help improve government.

If you have any questions, please contact Ellen Sandt at (213) 974-1186 or Richard Sanchez, Chief Information Officer at (213) 253-5600.

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